

Application No. 10/578,171  
Amendment dated September 21, 2011  
Reply to Office Action of March 21, 2011

This listing of claims will replace all prior versions, and listings of claims in the application:

**Listing of Claims:**

**Claim 1** (Currently Amended) An implant system, comprising:  
(a) an implantable device comprising a sensor implanted in biological tissue, the sensor having an outer surface including an analyte permeable coating,  
(b) a biological matrix exterior to the sensor and in contact with the analyte permeable coating on the an outer surface of the sensor implantable device and with the a biological system tissue, and  
(c) a plurality of cells supported by said the biological matrix, said the cells extending the functional lifespan of the sensor functionality by at least one day by promoting a biological interaction between the sensor implantable device and the biological tissue system around a portion of the implantable device.

**Claim 2** (Previously Presented) The implant system of claim 1, wherein said cells include at least one member selected from the group consisting of biological cells, engineered cells, support cells, stem cells, artificial cells and hybrid cells.

**Claims 3-8** (Canceled)

**Claim 9** (Currently Amended) The implant system of claim 1, wherein said biological tissue comprises mammalian tissue system is a mammal.

**Claims 10-13**(Canceled)

**Claim 14** (Previously Presented) The implant system of claim 1, wherein said sensor is an amperometric glucose sensor.

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Claim 15 (Previously Presented) The implant system of claim 1, wherein said sensor is a glucose sensor.

Claim 16 (Currently Amended) The implant system of claim 1, wherein said biological matrix at least partially embeds said sensor implantable device.

Claims 17-18(Canceled)

Claim 19 (Currently Amended) The implant system of claim 1, wherein the matrix ~~additionally supports~~ cells that are configured to suppress deleterious reactions between said sensor implantable device and said biological tissue system and/or said biological matrix.

Claims 20-24(Canceled)

Claim 25 (Previously Amended) The implant system of claim 1, wherein said system further comprises a support system and/or a delivery system comprising a gel, a paste and/or a polymer.

Claims 26-27(Canceled)

Claim 28 (Currently Amended) An implant system comprising:

- (a) an implantable device comprising a sensor having an outer surface including an analyte permeable coating, and
- (b) a biological matrix exterior to the sensor and in contact with the analyte permeable coating on the an outer surface of said implantable device the sensor, and
- (c) a plurality of cells supported by said biological matrix, said the cells being configured to extend extending the functional-lifespan of sensor functionality by at least

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one day when the sensor and matrix are said device is implanted in a biological system tissue by promoting neovascularization of the biological tissue.

Claims 29-36 (Canceled)

Claim 37 (Currently Amended) An implant system in biological contact with a biological tissue system comprising:

- (a) a cellular component, said cellular component includes at least one cellular community which induces a biological response in the biological system tissue;
- (b) a biological matrix material comprising a cell culture derived basement membrane in contact with the biological system tissue, said biological matrix material being associated with a portion of the cellular community; and
- (c) an implant device comprising a sensor and having an outer surface including an analyte permeable coating in contact with the biological matrix material, at least one of the biological matrix material and the cellular community extending the functional lifespan of the sensor functionality by at least one day by promoting neovascularization of the biological tissue,

wherein the biological matrix is exterior to the sensor.

Claim 38 (Canceled)

Claim 39 (Currently Amended) The implant system in biological contact with the a biological tissue system of claim 37, wherein the biological tissue is mammalian tissue system is a mammal.

Claims 40-50 (Canceled)

Claim 51 (Previously Presented) The implant system of claim 1, wherein the biological matrix comprises a basement membrane.

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Claim 52 (Previously Presented) The implant system of claim 28, wherein the biological matrix comprises a basement membrane.

Claim 53-58 (Canceled)

Claim 59 (Currently Amended) The ~~artificial~~ implant system of claim 37, wherein the cellular component comprises a cellular community that inhibits at least one of inflammation and fibrosis.

Claims 60-65 (Canceled)

Claim 66 (Currently Amended) The implant system of claim 1, wherein the system is configured to test the effectiveness of the sensor ~~an implantable device~~.

Claim 67 (Canceled)

Claim 68 (Currently Amended) The implant system of claim 28, wherein the sensor ~~implantable device~~ comprises a glucose sensor.

Claim 69 (Previously Presented) The implant system of claim 68, wherein the biological matrix comprises a basement membrane.

Claim 70 (Currently Amended) The implant system of claim 28 1, wherein said cells induce the growth of biological new tissue exterior to the sensor ~~in said biological system and/or between said biological system and said implantable device~~.

Claim 71 (Currently Amended) The implant system of claim 70, wherein said biological new tissue comprises vascular structures.

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Claim 72 (Previously Presented) The implant system of claim 28, wherein said implant system further comprises at least one genetic element supported by said matrix.

Claim 73 (Previously Presented) The implant system of claim 28, wherein said system further comprises at least one response modifier supported by said matrix.

Claim 74 (Canceled)

Claim 75 (Currently Amended) The implant system in biological contact with the a biological tissue system of claim 37 wherein the cellular component includes at least one member selected from the group consisting of normal vascular stem cells; a combination of normal vascular stem cells and engineered support cells; and a combination of normal vascular stem cells and engineered stem cells.

Claim 76 (Currently Amended) The implant system in biological contact with the a biological tissue system of claim 75, wherein the basement membrane has at least one of cytokines and growth factors bound thereto.

Claim 77 (Currently Amended) The implant system in biological contact with the a biological tissue system of claim 37, wherein at least a portion of the cellular community is bound to the biological matrix.

Claim 78 (Currently Amended) An implant system comprising:  
an implantable device including a sensor implanted in biological tissue, the sensor having an outer surface including an analyte permeable coating, and  
a biological matrix comprising a cell culture derived basement membrane exterior to the sensor and in contact with the analyte permeable coating on the an outer surface of the sensor said implantable device and with a the biological system tissue,

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said basement membrane extending the functional lifespan of the sensor functionality by at least one day when said device is implanted in a biological system.

Claim 79 (Previously Presented) The implant system of claim 78, wherein the biological system is a mammal.

Claim 80 (Previously Presented) The implant system of claim 78, wherein the sensor is a glucose sensor.

Claim 81 (Previously Presented) The implant system of claim 78, wherein the sensor is an amperometric sensor.

Claim 82 (Previously Presented) The implant system of claim 78, wherein the biological matrix at least partially embeds the implantable device.

Claim 83 (Currently Amended) The implant system of claim 78, wherein the functional lifespan of the sensor functionality is extended by suppressing at least one of inflammation and fibrosis of the biological system.

Claim 84 (Previously Presented) The implant system of claim 78, wherein the system is configured to test the effectiveness of an implantable device.

Claim 85 (Previously Presented) The implant system of claim 78, wherein the basement membrane has at least one of cytokines and growth factors bound thereto.

Claim 86 (Currently Amended) The implant system of claim 70, wherein the biological new tissue comprises capillaries.

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Claim 87 (New) The implant system of claim 1, wherein the cells comprise at least one member selected from the group consisting of cells that inhibit inflammation and cells that inhibit fibrosis.

Claim 88 (New) The implant system of claim 28, wherein the cells comprise at least one member selected from the group consisting of cells that inhibit inflammation and cells that inhibit fibrosis.

Claim 89 (New) The implant system of claim 1, wherein the cells extend sensor functionality by at least three days.

Claim 90 (New) The implant system of claim 78, wherein the basement membrane extends sensor functionality by at least three days.